Fairfax County Community-Wide Energy and Climate Action Plan March 31st Task Force Meeting Questions and Responses

The comments included below are presented exactly as submitted by CECAP participants and have not been edited for content or grammar.

Comments/Responses from Google Form Question 1A

Questions regarding BAU Projections

1. **Comment:** Under the Virginia RPS, by 2050 grid electricity CO2 emissions are to be ZERO. The BAU projects them to be 5.6 MMTCO2e. Why would we have a non-compliant BAU. Do you actually expect that the RPS is without feasibility?

   Response: The Virginia RPS established by the Clean Economy Act was not factored into the BAU projections, as it was not yet signed into law (it was subsequently signed on April 11). Subsequent analysis can incorporate the projected changes to emissions related to electricity production.

2. **Comment:** The BAU estimates that on road transportation mobile emissions will drop by 17% by 2030, yet sales of electric vehicles is not increasing and between 2018 and 2019, sales dropped by 10%. As well, mass transit ridership is dropping, not increasing. What is the basis for the assumption that on road emissions will drop?

   Response: On road transportation emissions were projected to drop 17% by 2030 due to fuel economy improvements that are factored into the EPA's MOVES2014b mobile emissions model. EV sales are just one of many assumptions that are built into the model. Note that the MOVES model does not take into account the recent federal rollback of light duty vehicle efficiency standards.

3. **Comment:** Is the BAU based established environmental regulations prior to rollbacks by the Trump administration? Do we for see any alterations in BAU forecasts due to current administration impacts on de-regulation efforts, particularly with auto standards.

   Response: COG DTP's emission projections do not take the recent rollback of vehicle fuel economy standards because the EPA MOVES2014b model has not yet been revised to reflect the changes. The deregulation efforts will likely result in less significant emission reductions.

4. **Comment:** Do the BAU scenarios take into consideration new legislation such as VA joining RGGI, VA Clean Economy Act, or Trump's rollback of vehicle efficiency standards? We know things will be changing and that some of the VA legislation has its own targets (e.g. for the energy sector). How would these new bills affect projections?

   Response: COG's projections do not take VA joining RGGI, VA Clean Economy Act, sector specific targets or federal rollback of vehicle efficiency standards into consideration, as the VA legislation was only passed in the last month, and the MOVES model does not currently account for the federal rollback of vehicle efficiency standards. These new VA bills will likely drive the BAU projections further down, while the federal rollback of legislation will likely translate into less significant emission reductions for on road transportation.

5. **Comment:** The business-as-usual scenario forecasts a 1% decrease in emissions by 2030, due to improved fuel economy. Did you take into account the recently finalized rollback of federal fuel economy standards or did you assume that the Obama-era rule was still in effect?

   Response: COG's emission projections do not take the recent rollback of vehicle fuel economy standards. The deregulation efforts will likely result in less significant emission reductions.

6. **Comment:** The BAU GHG projections in 2018 went up some and why? What specifically went up? Transportation, Electric etc.

   Response: COG's GHG emissions inventory for 2018 was in part based on data from utilities. Natural Gas consumption (both residential and commercial) went up in 2018 relative to 2015 (the last inventory year). HFCs and Natural Gas Fugitive emissions also went up. None of these increases were substantial. Overall emissions actually decreased between 2015 and 2018.

7. **Comment:** Slide 36 – The BAU assumption on solid waste growth indicates that current disposal methods will be utilized (Energy from Waste). This is not a realistic assumption. Capacity at existing WTE facilities is finite. While the waste from Fairfax County does not currently use all of the capacity at the WTE facility, this additional capacity is not necessarily available to County and this capacity serves other clients and customers. Therefore, any growth in waste generation should assume landfilling as a BAU scenario. Landfilling will have higher GHG emissions than alternatives higher on the waste management hierarchy, including recycling, composting, and energy recovery. Energy recovery, like at the Fairfax County WTE facility, is internationally recognized as a GHG mitigation technology.

Response: This is a good question and should be referred to the Task Force for discussion. Staff will provide information regarding the terms of the County's contract with Covanta.

8. **Comment:** Why was there a decrease in emissions from 2005-2018? Is carbon sequestration a consideration?

   Response: The decrease in emissions between 2005 and 2018 is largely due to decreases in the emission rate for the electrical grid. The Task Force could consider carbon sequestration as a future option. It was not included in the sample scenarios.

9. **Comment:** In Jeff's presentation, transportation doesn't change much in the BAU scenario? If we continue to allow sprawl in Fairfax county, won't VMTs increase?

   Response: Good question - needs to be referred to the County Staff and COG Transportation Staff for consideration and decision.

10. **Comment:** Properly accounting for landfilling as BAU for the management of waste growth will underscore the need for Fairfax County to address waste to meet its GHG reduction goals. Without any change, Fairfax County will see a rapid increase in GHG emissions associated with increased landfilling. This increase can be mitigated through expanded waste reduction efforts, recycling, and, for what remains, energy recovery. Therefore, we recommend that more sustainable waste management, inclusive of waste reduction, reuse, recycling, and energy recovery, be included in the County's GHG plans.

    Response: This is similar to question 7 and should also be referred to the Task Force for discussion.

Questions regarding Budget/Costs:

11. **Comment:** It appears to be well developed and documents are quite helpful in comparing scenarios. Is it possible to have a projected dollar amount related to each scenario?

    Response: An analysis of the costs of mitigation strategies and actions is not part of COG's scope of work for this stage of the CECAP development process. This will be handled by ICF in the next phase of the project.

12. **Comment:** In addition to the costs/impact on living associated with any of the other options, it would be nice to see the impact of not doing anything, as in increased health costs, increased storm damage if we think doing nothing will exacerbate that problem. The cost of these negative effects may partially bolster the argument for action

Response: This question moves into the area of adaptation and resiliency, and further answers should be available when Fairfax County begins this type of work (currently proposed, to be discussed at the upcoming Board of Supervisors Environment Committee meeting in June).

13. **Comment:** This may not address the specific questions asked above but additional information regarding the financial/economic impacts of the different scenarios may have been helpful.

    Response: An analysis of the costs of mitigation strategies and actions is not part of COG's scope of work for this stage of the CECAP development process. This will be handled by ICF in the next phase of the project.

14. **Comment:** In addition, it is difficult to weigh in on the scenarios (A-E) without having a much more comprehensive understanding of the costs and other trade-offs. For example, what does a "reduction scenario for both energy and transportation" mean in practical terms for a resident of Fairfax County (say in the middle range of county demographics)? How will each of these impact on their day-to-day lives - where they live, work, and engage with their communities (both in the short-term and further out in time)?

    Response: An analysis of the costs of mitigation strategies and actions is not part of COG's scope of work for this stage of the CECAP development process. This will be handled by ICF in the next phase of the project.

15. **Comment:** Now with COVID-19, what is the County's understanding of "business-as-usual." Localities across the country are now faced with budget shortfalls, causing their leadership to redirect resources.

    Response: Fairfax County is responding to the COVID-19 pandemic as quickly as possible. Staff continues to monitor the situation and adjust policies and procedures in response to new information.

    See the recently adopted budget for further information on resource reallocation, or the specific COVID-19 related budge information.

16. **Comment:** relative costs (financial/economic) and opportunity costs (economic/environmental)?

    Response: In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals. The review of selected actions and strategies will include cost-benefit analyses. Feedback on the costs and benefits of actions and strategies will be vetted by Task Force representatives. If there are specific criteria that support

decision making, consider providing those to Task Force representatives. It is also worth noting that cost is an output of the modeling effort, as costs will depend on how an action or strategy is implemented; detailed cost information for strategies will not be available as part of the strategy selection process.

17. **Comment:** What are the costs of the various scenarios?

    Response: In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals. The review of selected actions and strategies will include cost-benefit analyses. Feedback on the costs and benefits of actions and strategies will be vetted by Task Force representatives. If there are specific criteria that support decision making, consider providing those to Task Force representatives. It is also worth noting that cost is an output of the modeling effort, as costs will depend on how an action or strategy is implemented; detailed cost information for strategies will not be available as part of the strategy selection process.

18. **Comment:** What specifically will need to happen for heavy duty fleets to become low or no GHG vehicles and how will this get paid for?

    Response: New efforts to address emissions from medium and heavy duty fleets have recently been launched by a number of states, but not including Virginia at this time. There are a variety of approaches that could be used to reduce emissions from this subsector, including electrification, alternative modes of transport (rail), and other alternative fuels such as hydrogen. An analysis of the costs of mitigation strategies and actions is not part of COG's scope of work. This will be handled by ICF in the next phase of the project.

Questions regarding data, inventories and GHG calculations:

19. **Comment:** Slide 15 - GWP Timeframe - The team should consider the use of the 20-year timeframe in selecting GWPs. The selection of 100-year GWP has no basis in science, it was a compromise selection set many years ago to balance the reporting of short-lived and long-lived GHG emissions. According to the IPCC's 5th Assessment Report: There is no scientific argument for selecting 100 years compared with other choices. The choice of time horizon is a value judgment because it depends on the relative weight assigned to effects at different times. However, there is growing recognition that the 100-yr GWP does not accurately capture the climate impacts of SLCPs, including methane. For years, climate scientists have been calling for separate regulation of climate pollutants like methane owing to their potency and other differences relative to CO2.

    Response: The use of a 100-year time frame is driven by choice to use the ICLEI protocol, which uses the 100-year time frame. Methane and other shorter term acting emissions are given a multiplier, to account for them having a greater effect over the

100-year timeframe. 100 years also is set as the GWP timeframe for GCoM compliant analysis.

If Fairfax County wants to analyze emissions based on a 20-year timeframe, it can under the GCoM protocol. If so, we would need to figure how much work would be needed and how much more we would need to charge Fairfax.

20. **Comment:** Slide 39 - Low Carbon Energy from WTE - WTE was recognized in the Obama administration's Clean Power Plan as a source of low carbon energy. While that plan has been sidetracked, electricity generated from the WTE facility still carries the same benefits. Covanta has RECs that can possibly be used to increase the power supply to higher percentage of renewable power in the county. Furthermore, since the emissions from the fossil components of MSW are already included in the County's GHG inventory, any power that is procured directly from the facility would add zero emissions to the County's inventory. Doing otherwise would result in double counting of emissions.

    Response: Treatment of waste to energy emissions is addressed in the GCoM protocol. It states that the emissions from the generation of grid-supplied energy that occurs inside the localities boundary or from facilities that are fully or partially owned by the locality are to be reported. But as these emissions are already accounted for through the emission factor for grid-supplied energy, they should be excluded from the direct emissions and not accounted for in the total emissions. We need to review how we have reported the Covanta emissions to see if we have done so in accordance with the GCoM protocol.

21. **Comment:** Slide 31 - Scope of County Government Operations - shows the GHG emissions from Fairfax County Government Operations. The slide will lead one to believe that the Solid Waste disposal from Covanta is a government operation. It is not. The facility is owned, operated, and maintained by Covanta, Inc. The GHG emissions from the closed landfills and transfer station operations (I-66, and I-95) are government operations and should be included.

    Response: Similar to the previous Covanta questions, this should be discussed by the Task Force with additional information to be provided by staff.

22. **Comment:** Slide 22 - Activity-Based Approach - We support the selection of an activity-based approach, as it best reflects the GHG impacts of County residents and businesses. The predominate alternative, a facility or fence line based approach, could inadvertently include emissions over which the county cannot exercise control or influence. Consistent with ICLEI protocols, we also recommend that the team use the methane commitment approach for estimating GHG emissions from landfills under future BAU scenarios (see comments on Slide 36).

Response: This is an item for the Task Force to discuss. There are many approaches to consider, and this is a question for the Task Force to determine.

23. **Comment:** I assume the three 2012, 2016 and 2020 regional action plan editions provided to us with the review material were included as examples of past efforts and results to inform our main CECAP task ahead, which I understand is to support our supervisors with suggestions and recommendations for community outreach and education. However, very much unlike for the Fairfax CECAP, all three detailed regional plans contained only one top level GHG emissions goal: reduce regional greenhouse gas emissions 20% below 2005 levels by 2020. The first (2012) edition included 163 actions with target dates to complete inventories, benchmarking and implement plans. There was no requirement to relate the actions in the plan the contribution they would make to the overall emissions reduction goal.

    The 2016 edition was comprised of metrics from the 18 of 22 jurisdictions that responded to a survey. It simply listed the % of the 22 regional jurisdictions that had completed 59 actions by 2013 and again by 2016. The 59 actions included 36 new actions since the 2012 plan so it appears only about 23 of the original 163 actions in the 2012 plan had been dropped from consideration for implementation.

    The 2020 plan is the third edition of the regional action plan and while retaining the original goal to cut regional emissions 20% below 2005 levels by 2020, it differs significantly in format and taxonomy and adds two entirely new additional categories of actions, to 'build regional resilience' and to 'protect equity and health'. The plan actions for resilience are to address up to 7 deg F of temperature rise in the Washington region and up to 57 inches of sea level rise in the worst-case scenarios!

    Little in the three editions of the Regional plan beyond the overall reduction goal remained constant. My first takeaway is that in a wide and diverse region comprised of 22 political jurisdictions with all their differences in challenges and priorities and a challenge as complex and rapidly evolving as climate change it's difficult to agree on and maintain over time common goals in any detail below the highest level.

    Secondly there is nothing in these regional reports about the component part Fairfax County played in development and execution of the plan, including metrics and lessons learned from them. I assume Fairfax County has that information but don't know why it was not included.

    Response: The regional plan has changed over time for a variety of factors, including input from COG members, stakeholders, staff, etc. Fairfax has taken some stock of Fairfax County's accomplishments that would at least partially reflect the County's contribution to achieving regional goals. COG does not survey member accomplishments toward regional goals on an annual basis but has collected various data over the years that could be compiled and shared.

24. **Comment:** Illustrative Reduction Scenarios: What proportion of GHG reductions in the Residential and Commercial Energy sectors come from energy efficiency measures versus renewables/storage solutions?

    Response: COG reasoned that both energy efficiency improvements and greater renewables penetration could be achieved in a combined way to establish the estimated reduction percentage based on a rough assessment of estimates from past studies. COG did not specify the exact penetration levels of either efficiency or renewables, such a refinement in the analysis will be conducted by ICF as part of their scope of work during the mitigation analysis.

25. **Comment:** Do the proposed scenarios for commercial and residential energy sectors count for a planned increase in electricity consumption due to more EVs being charged at homes and offices?

    Response: Reduction estimates were developed using information from the Multi-Sector Work Group Report which did take increasing electricity consumption from EVs into account.

26. **Comment:** CECAP Reduction Scenarios: What is the difference between the Energy, Grid and Renewables sectors found on page 5 in the GHG Emissions Reduction Estimates table?

    Response: The Energy category is for overall on-site energy consumption. The Grid category relates to the generation sources of all grid electricity and provides scenarios where the grid's generation sources become cleaner. The Renewables category provides estimates of renewable energy penetration in the electricity mix.

27. **Comment:** Are the draft emission scenarios (v.2) unnecessarily limiting potential sources of emissions from the models? It is difficult from the Methodology Report to determine the statistical modeling used for projections. Although the lack of statistical methodology makes it difficult to replicate each model's projections, our greatest concerns is that major sources of GHG emissions do not seem to be included in even the most aggressive model E. Residential and commercial building fossil fuel-based heating and all vehicles other than passenger light duty vehicles appear to be arbitrarily omitted from the models. Excluding these sources from models makes it very unlikely the county can reach aggressive GHG reduction goals.

    Response: See written response to comment handled separately.

28. **Comment:** Jeff's presentation. Regarding transportation: why were low carbon fuels the only consideration? How about increased transit/public transportation? Were they considered?

Response: The COG analysis incorporates planned projects included in the Visualize 2045 transportation plan. This includes many projects that provide for increased public transportation. Use of low carbon fuels was additive to the projects already in the plan.

29. **Comment:** In Jeff's presentation, how did you estimate the change in VMTs over time?

    Response: VMT projections are developed by COG's Department of Transportation Planning as part of the network and travel demand development process used in the development of the Visualize 2045 transportation plan. More information can be found here.

30. **Comment:** On page 5 it states that commercial energy consumption associated with providing water supply and wastewater services are not compliant with the USCP Protocols. If this is energy associated with supplying water and wastewater services, how can it be that records of energy consumption are not readily available from the agencies that pay the bills for acquiring that energy?

    Response: Energy associated with water supply and wastewater treatment are captured in the inventory under "Commercial Energy". As the emissions from this electricity use was already captured, COG did not separately break out the emissions related to electricity use at water and wastewater treatment and distribution. This would require allocation of energy use at the multiple water and wastewater treatment plants and pumping stations that serve Fairfax County properties.

31. **Comment:** On page 15 it states that diesel consumption is attributed to regions based on the percent of stations located in the region. This seems an odd basis for this calculation because relatively little fuel is burned while sitting in stations vs while traveling between them. Additionally, a region with fewer, but further spaced stations, would actually use more fuel than a region with more densely located stations with shorter distance between them. Why would miles traveled within a region, or miles of track in a region, not be a far better estimator?

    Response: COG's analysis was limited by availability of data. Data showing train passenger miles traveled in Fairfax County was not available. We therefore used a per station allocation as the next best approach.

32. **Comment:** On page 24, discussion of GHG from solid waste treatment, I was surprised that the CO2 from waste incineration was estimated rather than monitored. Why given all of the other air emissions monitoring involved with such an operation would it not be feasible to monitor CO2 rather than estimating it for this large point source?

    Response: See separate detailed write up addressing this concern.

33. **Comment:** On pages 27 and 28, it seemed surprising that Fuel Oil and LPG consumption were assumed to be the same 12 and 32 years from 2018. Given the changes we've seen over the past decades in energy consumption, and the energy mix supplying it, is a 'no change' assumption defensible, or is the contribution of this too immaterial to the totals to justify spending effort to adjust it?

    Response: The emissions from these source sectors are relatively small compared to other sources and therefore COG did not analyze anticipated trends and simply held emissions constant. If the Task Force and County staff wish to develop more refined projections, the consultant team could consider a revised projection methodology.

34. **Comment:** On page 29 it was not clear to me what assumptions were being made related to expected fuel efficiency for vehicles in 2030 and 2050. Given the totally deleterious impact of the recent Trump Administration actions to loosen those standards, what assumptions are being used? Would it be helpful to assess the status of the County's plans against both the newly relaxed standards, and the prior standards, in the expectation that a future Administration, not averse to using science and acknowledging climate problems and the Federal government's responsibility to contribute to their solution, will either reinstate them or make them even more stringent? What penetration of EVs is made and using what method for arriving at that?

    Response: The EPA tool that is used to estimate emissions from the transportation sector (MOVES) has not yet been revised to reflect the changes to the vehicle fuel efficiency/GHG standards. The model assumes a future penetration of EVs in the fleet in its overall fleet efficiency assumptions. Further analysis of EV market penetration potential may be handled through more in-depth mitigation options analysis to be done by ICF.

35. **Comment:** Are there specific areas that were not included that could still be large contributors to GHG emissions (i.e. goods procured, business travel and personal travel)?

    Response: Aviation emissions were not included. Scope 3 emissions from consumption of consumer goods was not analyzed as this was an activity based inventory. The Task Force may choose to look at emissions related to product supply chains in its analysis.

36. **Comment:** Taking each question above in order, the recorded presentation was clunky to use and could have benefited from instructions (it would have been more user friendly to have a standard zoom video recorded webinar of the speakers with slides also on the screen at the same time); the business-as-usual projections and the reduction scenarios would have benefited from numbers or %s on the graphs all of the BAU graphs looked slightly different when they should have been exactly the same, so from the beginning, I felt uncomfortable with the visualization of the data; from the start I was puzzled by the introduction of terms in Scenarios C, D and E that are nowhere

defined even in the supporting materials e.g. what is low carbon gas and what is low carbon transportation mean? I also question the specific choices of sectors, as well as choices in particular sectors e.g. discussing only light duty vehicles rather than all categories of vehicles.

Response: These comments can be addressed in future revisions by including more definitions of the scenarios and terms such as low carbon gas and transportation. Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste). Low carbon transportation refers to on-road vehicles that do not rely on internal combustion engines using fossil fuels such as electric vehicles.

37. **Comment:** I'd appreciate a short explanation of what is meant by "low carbon gas" and "low carbon transportation" (slide 38 and following)

    Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste or biogas from wastewater treatment). Low carbon transportation refers to on-road vehicles that do not rely on internal combustion engines using fossil fuels such as electric vehicles.

38. **Comment:** 1. Actual Grid Electricity for 2018 was 4.4 MMTCO2e, projected in the BAU scenario by 2030 to be 4.9 MMTCO23. However, the Virginia renewable portfolio standard requires a 58% non-carbon dioxide production by 2030 and no new carbon-based fuel generation. This should result in only 1.8 MMTCO2e emissions, not 4.9. Why does the BAU fail to incorporate the RPS? By not incorporating that mandatory reduction, the BAU is a false representation of business under the mandatory regulatory schema, one the power sector is not allowed to ignore.

    Response: The BAU did not take Virginia's RPS into account, as it was only passed in the last few weeks.

39. **Comment:** Slide 15- Selection of GWP - The study is using the 100-year methane GWP from the IPCC 4th Assessment Report. While many inventories still use this figure, it is out of date. To reflect current science, I advocate that GWPs from the 5th Assessment Report be used (100-year GWP of 28-34 for methane).

    Response: Discussion on using 5th Assessment Report's figures.

40. **Comment:** Slide 24 - Use of eGRID Data for Electricity Factors - While the impact will be small, the team should be aware that the use of eGRID factors for electricity and the reporting of emissions from the combustion of waste in the Fairfax County WTE facility will result in some amount of double counting. The Fairfax County WTE facility's anthropogenic GHG emissions are included in eGRID factors.

Response: Agreed. Treatment of waste to energy emissions is addressed in the GCoM protocol. It states that the emissions from the generation of grid-supplied energy that occurs inside the localities boundary or from facilities that are fully or partially owned by the locality are to be reported. But as these emissions are already accounted for through the emission factor for grid-supplied energy, they should be excluded from the direct emissions and not accounted for in the total emissions. We need to review how we have reported the Covanta emissions to see if we have done so in accordance with the GCoM protocol.

41. **Comment:** I assume the models for the transportation sector will adjusted for the Administration's role-back of automotive mileage efficiency targets. Correct?

    Response: The current emissions projections do not reflect the recent rollback of the emission standards for automobiles. The effects of the new lower light duty vehicle efficiency standard are expected to be included in future updates of the EPA's MOVES modeling. Pending the update to the MOVES model, this may be best addressed under ICF's mitigation analysis work.

42. **Comment:** What proportion of renewable energy from the grid is currently from renewable energy credits, as opposed to renewable energy that is generated within the county/state? And how would this ratio change in the illustrative reduction scenarios?

    Response: This information is not currently known. Further analysis may be warranted.

43. **Comment:** What proportion of proposed increase in renewables is utility-scale versus commercial- or residential -owned? And was the proposed increase in renewables inclusive of storage solutions? If so, what?

    Response: Increase in renewables was largely focused at the utility-scale. Storage solutions were not considered.

44. **Comment:** Does the proposed waste sector account for e-waste disposal? If so, does this sector account for potential increases in hazardous waste disposal, e.g. old EVs that may need to be disposed of carefully due to harmful materials in batteries?

    Response: No, this was not considered. Any future consideration will need to address the full life cycle of products. For example, if automobile batteries are repurposed for electric grid storage, then the emissions associated with these batteries will differ than if they are directly disposed of when removed from vehicles.

45. **Comment:** Are the GHG estimates accurate and consistent between Fairfax's GHG emissions inventory and two MWCOG estimates? Fairfax County's 2013 GHG inventory, the MWCOG's Fairfax County GHG Inventory Fact Sheet and MWCOG's CECAP draft emissions scenario document scenario planning document vary. Fairfax's GHG inventory

and MWCOG GHG estimates for the same year differ as much as 23%. The two MWCOG documents differ by 7.5% to 8.5%. Fairfax's trash incinerator GHGs reported to the EPA are more than 4 times greater than the CECAP planning documents. Other emissions estimates in the draft MWCOG documents may omit important sources of GHGs.

Response: Largely due to the omission of a number of emissions categories in Fairfax County's 2013 GHG emissions inventory, as well as possible differences resulting from calculation tools (Fairfax County used the Climate Registry's General Reporting Protocol, while COG used ICLEI's ClearPath tool). The COG inventory for the CECAP excludes aviation emissions, while previous work has included this sector. Covanta reports all emissions to the EPA, which includes waste generated outside of the County's boundaries, emissions from the Covanta facility are addressed in a separate written response.

46. **Comment:** Are the GHG estimates accurate and consistent between Fairfax's GHG emissions inventory and two MWCOG estimates? Will you please address these discrepancies, including emissions related to the Covanta incinerator?

    Response: See the comment above, and separate written response.

47. **Comment:** Several times the term "low-carbon gas" was referenced. Could you define this?

    Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste).

48. **Comment:** In the last presentation, various jurisdictions were discussed; one target was 'net zero' while another was 'carbon neutral'. Zero carbon and carbon neutral were defined earlier in the meeting, but 'net zero' was not. Could you explain the difference?

    Response: Zero carbon means that no carbon or other greenhouse gas emissions are emitted. Carbon Neutral and Net Zero have the same meaning with respect to emissions goals: achieving the equivalent of zero carbon emissions by both reducing emissions and by using sequestration and/or carbon offsets.

49. **Comment:** Do they cover private sector emissions and polices to reduce them, including transportation?

    Response: The BAU and reduction scenarios do include private sector emissions, including transportation, but not any private sector policies to reduce them.

50. **Comment:** What are GWP emissions factors used, etc.? We want to be sure we are aligned with our best scientific understanding of climate change. (EPA and IPCC currently use factors from the 4th Assessment Report).

Response: COG used GWP emissions factors from the 4th Assessment Report as is set out in the ICLEI and GCoM protocols.

51. **Comment:** What is the basis for the calculation/estimate of therm usage in Fairfax County (residential and commercial) for natural gas?

    Response: Residential and Commercial Natural Gas emission calculations follow the U.S. Communities Protocol recommended methodology as outlined in Appendix C, BE.1.1 from Version 1.1 of the Protocol. Therm usage data was collected directly from utilities.

52. **Comment:** There are some inconsistencies between the information presented in the CECAP GHG inventory as it relates to the FCPS GHG published inventory. This observation was brought up outside of this form. There were two salient points made regarding the discrepancies. The first is that the CECAP report inadvertently omitted HFC data that was included in the FCPS inventory. So, this prompts the question: Are HFC emissions from around the county included in the remaining CECAP report, or are there other potential omissions? The second is that the CECAP report and the FCPS report used two different (but nearly identical) reporting tools: ICLEI vs Climate Registry respectively. Is there a need to consolidate the data into one reporting tool? If so, which tool is the right one? How do we know it is the right one? What are the differences?

    Response: HFC emissions within the County are fully accounted for - it is only with reference to government operations specifically that HFC emissions were not called out. Regarding the two reporting tools: needs to be referred to the Task Force for consideration and decision.

53. **Comment:** What is the assumption made about number of people working at home over time? (and therefore, needing less office space).

    Response: Telework is included in the transportation sector BAU projections to the extent at which it was represented in COG's 2007/2008 Household Travel Survey. The scenarios didn't specifically include increased telework as a reduction measure. This could be analyzed further by ICF.

54. **Comment:** What is the projected population increase over the next 10, 20, 30 years?

    Response: COG used the Cooperative Forecast Round 9.1. Population in 2030 is projected to be 1,271,203. In 2040, 1,373,716. In 2050, 1,471,094. 2050 was the only year that was estimated without the use of the Cooperative Forecast - population estimate follows Forecast trends.

55. **Comment:** I found the presentation interesting and educational although I struggled to figure out how to advance the slides along with the commentary. For a layman like me, more complete spelling out of acronyms and definitions would have helped. Discussion of low carbon or renewable gas was mysterious to me. I had never heard of that terminology. For a first-time conversion to virtual presentation, it was a commendable start, but hopefully can be refined with practice.

    Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste or biogas from wastewater treatment).

56. **Comment:** In general, I wasn't always clear on some definitions or reasons behind some of the content. Why on slide 50 are the emission reductions for 2030 NA? Why must Scenario E rely on increased 'low carbon gas' instead of other solutions? What is the definition of low carbon gas, renewable gas, or low carbon transportation? Adding in further explanations would make the presentation longer, but it would also help those of us still building our knowledge.

    Response: On slide 50, the emissions reductions for 2030 are shown as N/A for two scenarios, as these scenarios focused on 2050 emission reduction and did not include 2030 reductions. Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste). Note that the scenarios are provided as example scenarios, not to limit possible scenarios that might be included in the CECAP.

57. **Comment:** The book "Drawdown" (by Paul Hawken) has a full list of various actions that can be taken to reduce GHGs. I'm not convinced that we've been presented a complete list of GHG sources and, to achieve such drastic reductions as set forth by the BOS Environmental Vision (80% by 2050), we need to use every tool in the toolbox. What other sources were specifically excluded and why?

    Response: The focus of the reductions scenarios presented was to assess reductions in emissions from energy and transport emissions. While there are certainly other sources to consider, the bulk of reductions come from these, and therefore emphasis was placed on these sectors. We agree that to achieve higher levels of emission reductions will require a more comprehensive strategy across all sectors.

58. **Comment:** Other factors bear on this subject which should be mentioned if only to suggest that they are not being considered for some reason. For example, population density is a prime factor in local climate effects and can be regulated right now by planning, zoning, and the Comprehensive Plan, and the BOS. The reality of politics should be overruled in this effort. This is way too serious to let political considerations skew the outcome. Look at what is going on with the Corona effort.

Response: Development policies can have a significant impact on emissions. For example, in 2018 the average per household energy use intensity (MMBTu/household) for multifamily buildings over 4 stories in height (typically found in mixed-use high density areas) is 12.6 for electricity & 23.6 for gas, while the per household energy use intensity for single-family detached houses is 34.8 for electricity & 95.4 for gas, or nearly 2.5 to 4 times higher. Additionally, the transportation energy use per household is higher for single family detached households than for those located near transit. The region currently has a goal to have development focused in Activity Centers supported by high quality transit. Continued focus on these types of policy approaches may be desirable.

59. **Comment:** We have tree ordinances which appear to be regularly ignored. Trees have a significant mitigating effect on atmospheric carbon, and oxygen generation. This should be mentioned.

    Response: The Task Force may choose to look at emissions related to the carbon benefits of trees.

60. **Comment:** Other factors that should be mentioned if only to reject them are nuclear (dangerous, but controllable), net results of methods (for every electric vehicle, there is a power plant somewhere emitting CO2, oxides of nitrogen, hydrogen sulfide, etc.), none of which know where the state or county border are.

    Response: Nuclear energy and the indirect emissions from a transition to EVs could be noted in revisions.

61. **Comment:** Also, human behavior. By now everyone realizes that we are all part of the problem, from not turning out the lights to flying our private jet with one passenger. There should be mention that virtually every jurisdiction in the U.S. (maybe the world) is struggling with this issue. A lot might be gained by looking at what they are up to and mentioning a few that may parallel Fairfax County.

    Response: The importance of individual behavior choices could be noted in revisions.

62. **Comment:** Rail - I'm surprised that there are no consistent data on VRE passenger travel. Also, Metro rail does not appear to be included anywhere. Only VRE and MARC. I assume the MARC emission data is not included as the system does not go to Fairfax County.

    Response: Metro rail emissions are captured in the commercial energy and transportation sectors. It may be possible to pull out and highlight Metro emissions more directly depending on data availability from WMATA. Only VRE emissions would apply to Fairfax, not MARC. FTA provides passenger rail diesel consumption data for transit authorities. Emissions are calculated using diesel consumption in gallons and a

percent attributable to metropolitan Washington. 75% of VRE stations are located in Northern VA. Emissions are then downscaled to local jurisdictions by population. Yes, MARC emission data is not included here.

63. **Comment:** Are landscaping for residential and commercial sectors included anywhere or are they considered a di minimis level?

    Response: Emissions from landscaping were not specifically analyzed, but would be captured through the emissions associated with the non-road sector.

64. **Comment:** The solid waste assumption is that 100% goes to combustion. I thought the county was getting methane gas from the Lorton landfill. In any case, the new hills created by the landfill suggest some gas generation.

    Response: Additional consideration of emissions from landfilling may be warranted. In Fairfax County, the landfill gas from the I-66 and I-95 closed landfills is used for electricity generation. There is a nominal amount of flaring of methane at the I-66 landfill. Upon further review of the GCoM Protocol, the emissions from the landfill gas combustion may need to be calculated in a similar way as direct emissions from the Covanta WTE plant. These would be reported separately and not included in the community-based GHG emission inventory so as not to double count emissions already associated with grid-supplied electricity.

65. **Comment:** The discussion of the HFC calculation says it is based on national data. Is that data regional as air conditioning numbers vary significantly across the country?

    Response: The HFC calculation uses national data from the EPA and downscales it according to population in the jurisdiction. Using an average national number is based on this region being in the temperature zone between the air conditioning heavy south and heating heavy north and therefore not skewed to one extreme or the other.

66. **Comment:** The estimates for on road vehicle emissions show a steady decline in the face of increasing VMT. Is this reflecting expected mileage improvements included in the Obama era standards or have the assumptions been updated with the more recent and less stringent Trump decisions?

    Response: On road transportation emissions were projected to drop 17% by 2030 due to fuel economy improvements that are factored into the MOVES2014b mobile emissions model. The MOVES model does not take into account the recent federal rollback of standards.

67. **Comment:** The estimates do not have any EV split in the fleet. Is this reasonable given the growing popularity of EVs in a wealthy jurisdiction like Fairfax?

Response: The EPA tool that is used to estimate emissions from the transportation sector (MOVES) assumes a future penetration of EVs in the fleet in its overall fleet efficiency assumptions. Further analysis of EV market penetration potential may be handled through more in-depth mitigation options analysis to be done by ICF.

68. **Comment:** It is unclear as to how much confidence we should be attributing to the projected information. For example, should we consider these highly accurate (say +/- 10%), moderately accurate, or less so?

    Response: The issue of uncertainty is addressed in the documentation for the inventory.

69. **Comment:** The ongoing COVID-19 pandemic is likely to have significant impacts in the county and affect the projections, but was not getting much attention until the past few months.

    Response: Fairfax County is responding to the COVID-19 pandemic as quickly as possible. Staff continues to monitor the situation and adjust policies and procedures in response to new information.

70. **Comment:** Don't we have local emission measurements, instead of using eGRID exclusively? What focus is there on Single Use Plastic?

    Response: COG uses eGRID as the emission factor for electricity generation given the GHG inventory approach. Certainly, data on direct emissions from facilities within the County exist and could be considered as part of the CECAP process. The GCoM protocol provides for direct emissions from county-owned electric generation facilities separately reported, although not included in the community-based emissions estimate so as to not be double counted both under electric generation emissions and direct emissions. So far in the analytical process there has not been any focus on single use plastics.

71. **Comment:** How can we better quantify scope 3 emissions, which are likely to be the major gap in this analysis?

    Response: This needs to be referred to the Task Force for consideration and decision. This was a specific question posed by some members of Fairfax County staff early in the process, but inclusion of scope 3 depends on resources and data available.

72. **Comment:** I saw no mention of aviation emissions in the presentation or materials and found this puzzling. I understand that you are looking specifically at emissions generated within the county, so emissions from an airport that is only half-located within the county present some accounting challenges. That said, this is such a major source of GHGs that it is puzzling to leave it out entirely. Can you explain why this was left out and do you have any estimates of the emissions from flights originating at Dulles or,

alternatively, flights and shipments from any airport by individuals and businesses in Fairfax County?

Response: Aviation emissions have previously been included in Fairfax County and COG emissions inventories, and were included in a previous draft. The decision was made to remove them, but the Task Force should discuss and make a decision.

73. **Comment:** What Sector does Water Treatment fall under? Is it with Wastewater?

    Response: Emissions related to water treatment are picked up in the commercial electric consumption data. They are not separately accounted for.

74. **Comment:** I'm concerned that the basis for the data may not truly reflect the actual situation. I was also concerned that some information may have been made clearer (definitions of terms so everyone was on the same page).

    Response: Noted.

75. **Comment:** It would be good to know what technologies are being referred to with regards to low carbon gas.

    Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste or biogas from wastewater treatment).

76. **Comment:** Can you please clarify what exactly is meant by "low carbon gas", where it comes from, and what it would replace?

    Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste or biogas from wastewater treatment).

77. **Comment:** I would like to see more detailed information about the some of the sectors and scenarios. For example, how what is ultra-clean transport, and how is it envisioned that we would eliminate all HFC by 2050 under scenario E? Without more detail, it is difficult to understand how practical these elements are.

    Response: Ultra-clean transportation referred to a scenario where nearly all classes of vehicles (light, medium, and heavy duty) are either no or low emitting vehicles or are using carbon neutral fuels. It is not clear how all HFC usage could be phased out by 2050, this was a hypothetical scenario illustrating what may be needed across multiple sectors to achieve an aggressive emission reduction goal.

78. **Comment:** It seems the descriptions of Scenarios C and D are reversed on page 3 from those on page 1 of the draft paper.

    Response: OK, will address this.

79. **Comment:** Slide pg 59 – All sectors should be included, but those with largely immaterial GHG contributions to the overall total emissions should be treated very briefly, at least at the outset, looking only for any win/win reduction opportunities of reasonable cost that are easy to implement. The vast majority of effort should be devoted to the large emitting categories.

    Land sector emissions likely fall in the largely immaterial category and so would be expected to be treated as notes in prior paragraph.

    The Plan should include all scope 1, 2, and 3 emissions as should be the case with all other jurisdictions.

    The choice of GHGs to include should be addressed as mentioned in the first item related to this slide – where material, or where known reduction opportunities exist, they should be captured, but otherwise the lesser contributing GHGs should be left to be addressed after the big contributors have been thoroughly addressed. Making even a 5 to 10% dent in a very major contributing category can often provide a greater overall reduction than even a 75% or 90% reduction in a minor category/source.

    Response: These points are all valid and should be discussed by the Task Force.

80. **Comment:** The decrease in GHG emissions 2005 to 2018 is surprising. I would like to see a breakdown on the decrease by inventory sector and a measure of GHG emissions from 2010 and from 2015 to see in what time frame most of the decrease took place or was there even an increase at some times from 2005 to 2018.

    Response: COG can provide a breakdown of the decrease in emissions between 2005 and 2018 in reduction scenarios spreadsheet. COG can also provide 2012 and 2015 as intermediary years.

Questions regarding goal setting:

81. **Comment:** Please provide additional information about MWCOG's regional goal of an 80% reduction from a 2005 baseline.

    Response: The regional GHG emissions reduction goals include 10 percent below business as usual by 2012 (back down to 2005 levels), 20 percent below the 2005 levels by 2020, and 80 percent below 2005 levels by 2050. These goals were established when

COG adopted the 2008 regional Climate Change report. The region met its first 2012 goal but there needs to be further reductions to meet the 2020 and 2050 goals.

82. **Comment:** Slide pg 67 - Sector-specific Goals - The Plan should focus dramatically on the 3 categories of emissions that represent 93% of its GHG emissions; transportation and mobile sources, commercial energy, and residential energy. The materiality of an emissions category, and source within a category, should be a very important consideration of how much time is even devoted to trying to address it. If there is an easy, obvious and cost-effective means to quickly and easily reduce GHG emissions in some area that is a small contributor, it would worthwhile to do so. Otherwise time should be spent working on areas where significant reductions are possible so that there is the greatest result for the time and money investment. It would be very beneficial to all involved, but especially the BOS as decision makers, to see a chart for each of the 3 key sectors, and also a chart for all sectors in aggregate, of what steps can deliver how much GHG reduction at what cost per ton. I will attempt to attach an example of what such a chart would look like. If it does not come through, please advise how I can deliver that to you. The Y axis is cost/ton reduction, and the x axis is number of tons/yr that a reduction technology/strategy is expected to deliver. The height of the bar shows how expensive a technology or approach is, while the width of the bar shows how many tons it is expected to deliver. The x axis extends to the right as far as the target amount of GHG reduction for a sector or in aggregate. It is almost certain that at the outset of the Plan not enough technologies/strategies will be identifiable to reach the goal amount, and that this will not be possible at a cost/ton that might seem reasonable to some or many people. It is most often the case that the focus of reductions is on those approaches that can be most cost effectively implemented to achieve the goal. This is shown in the aggregate across-sector version of this graph.

    Response: The question of sector-specific goals was asked in the Google Form, and the majority of the respondents felt there should be sector-specific goals. The Task Force will discuss and decide the goals for the plan, including whether to have sector-specific goals, and if so, which sectors to include.

83. **Comment:** Slides 18-19, 58-59. It is not clear to me what ICF is proposing when it comes to the scope of the plan. Are we including activities that are in scope 1, 2, and 3 as defined on slides 18-19? On slide 59, what is ICF recommending for each of these goal boundaries?

    Response: The presentation provided an overview of greenhouse gas goal setting from The GHG Protocol Mitigation Goal Standard. Goals, and goal boundaries, will be decided upon by the Task Force through a vote. Recommendations from the GHG Protocol Mitigation Goal Standard and ICF's approach include:

    - Define geographic coverage: In most instances, the geographic coverage will be the same as the jurisdiction's geopolitical boundary.

- Choose sectors: The Intergovernmental Panel on Climate Change (IPCC) groups emissions and removals into five main sectors: (1) energy (2) industrial processes and product use (IPPU) (3) agriculture, forestry, and other land use (AFOLU); (4) waste and (5) other. The GHG Protocol Mitigation Goal Standard encourages the inclusion of as many IPCC sectors as possible within the goal boundary. ICF's approach is to focus on the highest emitting sectors and the sectors in which the jurisdiction can have the most impact. For this planning effort Fairfax County and the Task Force may elect to focus first on what the County has control or influence over, while then clearly identifying other strategies and actions for which the County will need to work with partners to implement.
- Decide on treatment of emissions and removals from the land sector: Options include (a) include in the goal boundary, (b) treat as a separate sectoral goal, (c) treat as an offset, and (d) not accounted for. There are advantages and disadvantages to each option which are, described on page 33 of The GHG Protocol Mitigation Goal Standard.
- Choose in-jurisdiction and out-of-jurisdiction emissions: As noted in the GHG Protocol Mitigation Goal Standard, jurisdictions should seek to maximize comprehensiveness and minimize leakage by including in-jurisdiction emissions and significant out-of-jurisdiction emissions in the goal boundary. Jurisdictions may seek to exclude in-jurisdiction and out-of-jurisdiction emissions that the jurisdiction cannot directly control or influence (e.g., emissions from aviation), an approach which is consistent with other county-level goals across the country. For this planning effort Fairfax County and the Task Force may elect to focus first on what the County has control or influence over, while then clearly identifying other strategies and actions for which the County will need to work with partners to implement.
- Choose greenhouse gases: It is recommended that goals include the seven most common gases are CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and NF_3. A climate action plan may include fewer greenhouse gases depending on objectives, data quality, mitigation opportunities, and capacity to accurately measure and monitor each greenhouse gas.

84. **Comment:** How have you taken into account in feasibility the two major elements necessary to understanding social feasibility: ability to pay and willingness to pay.

    Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. At a high level, ability to pay can be understood from economic criteria outputs, such as the costs of actions and strategies for actors (e.g., the County). Willingness to pay can be understood through Task Force representatives and through community engagement.

85. **Comment:** Can the planning models include legislative, regulatory and budgetary changes in Richmond that appear essential to achieving significant GHG reductions?

We attempted to independently simulate the five draft models with the Energy Policy Simulator (EPS), an online, open source, research-based tool developed by Energy Innovation Policy and Technology with support from MIT and Stanford, Argonne National Laboratory, the National Renewable Energy Laboratory, Lawrence Berkeley National laboratory and others. Our simulations attempting to replicate the five draft models suggest that state action will be necessary to make dramatic GHG reductions. Action by the county on all sources of GHGs will need to be included, as well. In an attachment, the Faith Alliance for Climate Solutions presents our simulations of the five models and suggestions of actions at the County, State and Federal level that could give Fairfax a better chance of achieving net GHG neutrality by 2050.

Response: This topic should be discussed by the Task Force and a decision made as to how to proceed.

86. **Comment:** We have several concerns about the draft CECAP planning documents. We offer some recommendations for improving the preliminary models that we hope will improve the County's likelihood of reaching an 80% reduction by 2050, much less reaching 100% reduction by 2050 or earlier.

    Response: Input is appreciated.

Questions regarding the CECAP process:

87. **Comment:** Slide pg 63 - Interim targets are essential, and should be treated not as interesting aspirational markers, but as firm commitments that if not reached, result in the BOS evaluating what additional new steps have to be taken to make up for the missed reductions in addition to the reductions already identified to be taken in the next interim period. Targets should be set for every 5 years, and projections should be made at the outset, and annually as new measures are identified and adopted, and things planned for are possibly found not to be feasible or as beneficial as expected. It is important that the interim targets be set very aggressively since the value of a ton of reduction in the early years of a plan is much more impactful on future temperature rise, than the same ton (or even more tons) reduced many years down the road. Aggressive interim targets that are expected to be met also mitigate against the tendency to keep telling a good news story about how 'we will reach our goal in 2050' despite slipping from even a pro rata/proportional meeting of reductions necessary to achieve that goal, by relying on 'some miracle' to occur in the out years.

    Response: It is true that multi-year goals have a better chance of limiting cumulative emissions over the goal period than single-year goals, and they facilitate understanding of anticipated emissions levels over multiple years, rather than only a single year. Goals, both long-term goal(s) and interim year goal(s), will be decided upon by the Task Force through a vote. It is recommended that the commenter refer this comment to the Task Force for consideration.

88. **Comment:** Slide 64 - The qualitative concept of 'substantially reducing emissions from BAU' is an unenforceable concept to which no one can be held accountable, and everyone can interpret for themselves what they think it means. In some ways, this seems to be what FFX Co has been looking to do for the past decade or more, and which has left us in need to now take more precipitous action to try to catch up for the time lost not adopting and executing a Credible Climate Plan. We need to commit now to such a Credible Plan to meet the 80% by 2050 goal!

    Response: Thank you for your comment. The Task Force will be discussing and setting goals at the next meeting.

89. **Comment:** Was there a reason why other jurisdictions' goals were not considered/analyzed from outside of the Washington, DC region? Other population centers may be comparable in terms of population, sector emissions, etc., such as those in New York, California, and elsewhere, and may lend a useful frame of reference. It is possible these were considered, but there is no list to refer to for confirmation.

    Response: These regions were provided as a point of local comparison, and reflect many of the goals being used across the country. ICF is working in many of the jurisdictions mentioned (e.g., New York and California) and will be incorporating our lessons learned from working in these areas as they apply for Fairfax County. It will be important to learn from others in development of the plan.

90. **Comment:** The materials were fine, but it's hard to digest without give and take discussion. Also, I'm a lay person and do not fully understand all of these terms and implications. I do understand the limitations we are currently under, but it's still frustrating to the process

    Response: Understood.

91. **Comment:** I thought that the focus of this effort was to come up with recommendations as to what residents and business would/could voluntarily do to assist with carbon reductions. The presentation and the questions seem to suggest that the focus groups are to provide views on what goals should be which rely on governmental actions much broader in scope than voluntary efforts.

    Response: You are correct. The CECAP will focus on the voluntary actions citizens and businesses can engage in to reduce carbon emissions. In order to prioritize and determine which strategies and actions are appropriate, we need to first determine the current emissions levels and set goals to guide these actions. There must also be an acknowledgement that to get to some of these goals, we must go beyond voluntary actions to governmental actions, and potential legislative efforts.

92. **Comment:** Implicit in the scenarios is a goal to reduce greenhouse gases without a full description or complete recognition of the other goal criteria (boundary, type, level, etc.) outlined in the goal setting presentation. The scenarios presented and spreadsheets provided, show a comprehensive and detailed analysis of various approaches and potential results; however, we seem to have gotten the cart before the horse. I would have liked us to have the group set the goals considering all the criteria presented. The agreed upon goals would then drive the scenario or scenarios. This would provide needed focus for how to proceed as we are asked to comment on scenarios, without knowing if they will achieve our goal.

    Response: The Task Force should discuss this perspective and make a decision regarding this potential avenue for action.

93. **Comment:** In addition to reducing greenhouse gases are we going to consider other benefits? This maybe important to gain public agreement and support.

    Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. Information on these benefits beyond greenhouse gas emissions will be available prior to the community engagement planning in Task 4, and may be qualitative or quantitative.

94. **Comment:** Fairfax has significant data of its own on its progress meeting goals for reducing carbon emission over several years. Will Fairfax County staff be providing the TF and FG members suggested measures to facilitate achieving the emission reduction goals decided upon this month and will there be any data on the success rate to date on such measures as have been implemented so far by Fairfax County, or by other jurisdictions?

    Response: In Task 3 (modeling of mitigation actions/strategies), ICF work closely with Fairfax County to identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals, building on and acknowledging what is already in place and working. The Task Force and Focus Group will have opportunities to provide input on actions and strategies. Depending on the data that is collected, information on the success rates on strategies can be made available. It is envisioned that these data would be part of interim goal success measures.

Questions regarding the scenarios:

95. **Comment:** In the 2030 - scenarios, why aren't the RPS reductions assumed and incorporated?

Response: The Virginia RPS established by the Clean Economy Act was not factored into the reduction scenarios or BAU projections, as it was not yet signed into law (it was subsequently signed on April 11).

96. **Comment:** In all the 2050 scenarios, why aren't electricity emissions zero, per the RPS mandate?

    Response: The Virginia RPS established by the Clean Economy Act was not factored into the reduction scenarios or BAU projections, as it was not yet signed into law (it was subsequently signed on April 11).

97. **Comment:** On what basis to you assume a 5.3% reduction in transportation in the 2030 low scenario, but much higher reductions in the BAU scenario?

    Response: Further clarification is needed to answer this question.

98. **Comment:** Are the draft emission scenarios (v.2) unnecessarily limiting potential sources of emissions from the models? Specifically heating and cooling and all vehicles other than light duty.

    Response: To achieve aggressive reduction goals, the plan will need to involve efforts to reduce emissions from the source sectors noted.

99. **Comment:** Several significant options were lumped into the 'Other' category for consideration to reduce emissions, such as purchasing of offsets or RECs, or electrification of on-road and off-road fleets. Were these considered at all in the assumptions that informed the projections in the various options, A through E? And if so, how were they considered?

    Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. Therefore, some options were grouped and not individually analyzed. These options can be more fully addressed if desired in the later stages of analysis.

100. **Comment:** Where is the illustrative reduction scenario for net zero carbon by 2050? The environmental community, backed by climate science, has been advocating for net zero carbon for years. This is a mainstream target at this point, adopted by dozens of states and localities across the U.S. (including our neighbors in Arlington, Montgomery, and DC) and championed even by legislators at the federal level. A net zero carbon scenario must be considered by this task force or we've failed to represent a huge population in Fairfax County that believes in strong climate goals - just look at the thousands of people in our communities who have shown support for Faith Alliance for Climate Solutions' Fairfax to Zero campaign and 350 Fairfax's Fossil Free Fairfax

campaign. That a net zero by 2050 scenario wasn't modeled in the March presentations seems like a MAJOR oversight.

Response: The approach used was to demonstrate that a focus on limited sectors would only generate marginal reductions, and that achieving aggressive reductions would require a comprehensive multi-sector approach. Achieving complete carbon neutrality by 2050 would require addressing emissions from all sources sectors comprehensively. The Task Force can consider recommending such a goal as part of the CECAP process.

101. **Comment:** Is there a more detailed listing of the different things that would be done in each scenario.

Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. Therefore, some options were grouped and not individually analyzed. More details on implementation approach and requirements may be available from ICF from their pending mitigation analysis.

102. **Comment:** I was reviewing Scenarios A and B to determine which portions of the savings for residential and commercial buildings are due to energy efficiency improvements, and which are due to grid improvements. From reviewing the materials, it appears that the percentage of the grid assumed to be renewables is 43% and 52% respectively by 2050, and the energy efficiency improvements by 2050 are 20% and 30% for residential and 35% and 43% for commercial. Confirmation of this would be useful.

Response: The percentages you list are correct; however, COG did not attempt to attribute a certain percentage to efficiency or renewables independently. The idea was that through either efficiency improvements or renewables deployment those percentages could be attainable as estimated in previous studies.

103. **Comment:** Which scenarios are most realistic and attainable?

Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. The Task Force will be asked to determine which are realistic and attainable.

104. **Comment:** Is the BoS fully behind all of the scenarios (why or why not)?

Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. Specific recommendations are to be made by the Task Force for future BoS consideration.

105. **Comment:** What technology, infrastructure and regulation are required for each of the scenarios to be achieved?

Response: To be handled by ICF in their mitigation analysis.

106. **Comment:** The material presented five projections for emission reduction. This is helpful because it allows a layperson such as myself to understand how little the first three approaches have on the overall problem. However, only one option appeared to meet the target goals. Shouldn't there be a reduction projection that exceeds the County's stated goals. Any long-term climate plan should assume that there will be emissions not accounted for in the inventory that will also need to be incorporated into the goal setting. I would rather be aggressive in setting the goal and find that we only hit the 80% reduction rather than miss the target altogether.

Response: The approach used was to demonstrate that a focus on limited sectors would only generate marginal reductions, and that achieving aggressive reductions would require a comprehensive multi-sector approach. Achieving complete carbon neutrality by 2050 would require addressing emissions from all sources sectors comprehensively. The Task Force can consider recommending such an aspiration a goal as part of the CECAP process.

107. **Comment:** As written, Scenario B does not suggest a much more aggressive grid/renewables improvement over Scenario A for year 2050 as both are provided at a 52% reduction. Rather it appears the purpose of Scenario B is to achieve more improvements in the earlier, 2030 timeframe. You might want to emphasize that in the summary of this scenario. I think the distinction comes through better in the draft paper than in the presentation.

Response: OK, appreciate the comment.

108. **Comment:** Scenarios D and E include 'low carbon gas'. What do you mean by this? Is this natural gas with carbon capture and storage? Please provide the evidence that you relied on to conclude that this is a realistic possibility. Specifically, do you think this is more realistic than electrification of heating and hot-water systems (which, when combined with a 100% renewable grid, could eliminate the need for natural gas)? If not, then why is electrification only mentioned briefly as a possibility and not specifically included in any of the scenarios?

Response: Low carbon gas refers to the development of renewable natural gas (e.g., gas developed using biomass sources such as agricultural waste or biogas from wastewater treatment). Further consideration of the relative feasibility of different approaches to reducing emissions will be developed by ICF in their mitigation analysis work.

109. **Comment:** In Scenario's A to D, what specific renewable's (solar, wind, etc.) were targeted to provide the most successful outcomes and how specifically was the 100% Net Zero grid achieved?

Response: Specific renewable sources were not looked at. This would be subject to further analysis if the Task Force selects this option.

110. **Comment:** In slide 50 county wide goals with different years were presented. What specific County, State, and Federal law changes, to increase electric, transportation, water, etc. Efficiency standards to combat GHG would have an effect on each column (2030 to 2018 etc.)? How was that factored into each column? Were tax incentives to achieve such outcomes from the County, State, and Feds factored in too?

    Response: The emissions reductions calculated on slide 50 were completed using a top down sector based methodology that examined the overall changes needed within various areas of emissions. For example, the percentage of carbon free electricity on the grid, or the overall decrease in carbon from Light duty vehicles. Since the modeling was completed as a top down sector based methodology, no specific amount of emissions reductions can be directly attributed to specific policies such as efficiency standards or tax incentives. In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals and will be able to more easily attribute emissions reductions to specific local, state and federal policies.

111. **Comment:** What are the specific changes for each column that need to happen to achieve each goal (improvements such as all electric fleets, solar, wind, etc.)? Was Dominion power's adoption of more renewable energy, between now and 2050, in their mix of fuels factored in too?

    Response: Dominion Energy's renewable energy plans were not factored into the BAU projections at this point. Subsequent analysis can incorporate the projected changes to emissions related to electricity production.

112. **Comment:** Is it possible to identify and consider other alternative scenarios than those listed? For example, CSG believes reduction in vehicle miles traveled and smarter land use connected with public transportation needs to be included in the scenarios.

    Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. More details on implementation approach and requirements may be available from ICF from their pending mitigation analysis.

Questions regarding strategies:

113. **Comment:** Can the planning models include legislative, regulatory and budgetary changes in Richmond that appear essential to achieving significant GHG reductions?

Response: In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals. The review of selected actions and strategies will include the regulatory or legislative authority as well as cost-benefit analyses. ICF will be reviewing changes at the state-level to the extent they effect Fairfax County and to the extent they are fully defined and are in place or likely to be in place.

114. **Comment:** This may be further down the road, but several jurisdictions in Europe, as well as Japan, are seriously looking into hydrogen as a promising future fuel. The fuel can be generated through electrolysis ('green' hydrogen), and can be generated by offshore wind facilities as a way of offloading excess generation capacity. The city of Aberdeen has invested in hydrogen buses and fueling stations. Is this a consideration worth looking into for later (e.g., 2050) goal setting?

    Response: Alternative fuels such as green hydrogen via electrolysis powered by renewables can be considered as an action/strategy in Task 3 (modeling of mitigation actions/strategies) for either City operations or for alternative transportation tools that are part of a community-wide strategy. The list of mitigation actions/strategies will be developed based on community feedback and approved by the Task Force.

115. **Comment:** FXX CY Operations and Schools account for only 4-5% of the community inventory. How do we affect the other 95%?

    Response: This is an excellent topic of discussion for the Task Force, specifically as it regards goal setting.

116. **Comment:** The materials are clear and I understand them. However, over time we would like to understand what the impact on commercial buildings and construction could be. The supporting materials indicates that using building codes, incentives and technical assistance could address energy efficiency and Greenhouse Gas emissions. It would be helpful to learn more about these measures and what they would involve.

    Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. Strategies and actions have not been selected by the Task Force at this point. More information about the impacts of these measures would be provided if building codes, incentives and/or technical assistance are selected as mitigation actions/strategies to model under Task 3.

117. **Comment:** What can data centers do specifically to offset their GHG emissions since they are very power-hungry places? Have micro-grids with renewable energy on-site been considered in their mix? How will tax incentives by County, State, and Feds be considered to achieve these goals too?

Response: COG and NVRC are actively engaged with the data center sector given their rapid growth and impact on electricity consumption. Large off-site renewable energy purchases are one option. Microgrids are also of interest and there is continued work to explore such options. Tax incentives could certainly be a useful tool.

Technical Questions:

118. **Comment:** Slide 68 notes that ICF reviewed 40 jurisdictional climate plans without noting which ones. Which jurisdictions were considered?

Response: Jurisdictional climate plans reviewed by ICF include:

- 2015 Climate Change Action Plan Update – Pennsylvania
- Arlington's Community Energy Plan
- Alaska Regional Energy Plans
- Climate Framework for Delaware
- Loudoun County Energy Strategy
- Sustainable Frederick County
- Howard County 2015 Climate Action Plan
- Montgomery County Climate Protection Plan
- Denver 80x50 Climate Action Plan
- Colorado Climate Plan: State Level Policies and Strategies to Mitigate and Adapt
- DRAFT 2017 Climate Change Scoping Plan – California
- Draft 2017 Comprehensive Energy Strategy – Connecticut
- Connections 2045: Plan for Greater Philadelphia
- Energy in the New Virginia Economy
- Final Report of the Kentucky Climate Action Plan Council
- 2008 Texas State Energy Plan
- Final Report: A Climate Change Action Plan – Virginia
- Greenworks: A Vision for a Sustainable Philadelphia
- Iowa Energy Plan
- Leading the Charge: Wyoming's Action Plan for Energy, Environment, and Economy
- Maryland Greenhouse Gas Emissions Reduction Act Plan UPDATE
- Massachusetts Clean Energy and Climate Plan for 2020: 2015 Update
- Minnesota's 2025 Energy Action Plan
- New Jersey Energy Master Plan Update
- New York City's Roadmap to 80 x 50
- New York State Climate Action Plan Interim Report
- Pittsburgh Climate Action Plan (Version 2.0)
- Powering Our Future: A Clean Energy Vision for Philadelphia
- President Obama's Climate Action Plan
- Regional Climate and Energy Action Plan - MWCOG
- Report of the Illinois Climate Change Advisory Group
- Roadmap to Implementing Michigan's New Energy Policy: Final Report
- Sustainability DC

- Sustainable Jersey Climate Action Plan
- Rhode Island Greenhouse Gas Emissions Reduction Plan
- The Energy to Lead: 2015 New York State Energy Plan
- West Virginia State Energy Plan 2013-20

In addition, ICF is working on climate planning efforts with a number of jurisdictions, such as Los Angeles County and City, New York City, New York State, Delaware, Pennsylvania, Denver, and San Bernardino County (CA).

119. **Comment:** Will the COG be able to furnish the TF and FGs measures of effectiveness for reducing emissions from any of the other jurisdictions to inform the next action plan?

    Response: ICF will be using information on effectiveness, in the form of GHG reductions, from measures as analyzed from other jurisdictions in the modeling being conducted in Task 3 (modeling of mitigation actions/strategies) where appropriate. Additionally, as part of the process for selecting actions and strategies, ICF will provide a high-level indication of the effectiveness of measures in jurisdictions similar to Fairfax County to the extent that information is available.

120. **Comment:** What is a reasonable ability of the county to impact the needed lowering of GHG?

    Response: The ability of the County to reduce GHG emissions is dependent on the efforts of the public, and the County. CECAP is envisioned as a community plan, with guidance for citizens to take to reduce GHG emissions. The County will continue to work to reduce GHG emissions in its own operations. New technologies, and new challenges will continue to arise, and the progress made as well as the CECAP will periodically be assessed to continue to work toward lowering GHG emissions.

121. **Comment:** Are all the scenarios technically feasible?

    Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. ICF will conduct a more in-depth mitigation analysis that will more fully address this.

122. **Comment:** If the scenarios are not currently technically feasible, do we have a reasonable understanding that the technologies will be functional and feasible in the future?

    Response: The scenarios were general in nature to show potential levels effort to achieve different levels of emission reductions. ICF will conduct a more in-depth mitigation analysis that will more fully address this.

Comments/Responses to Google Form Question 1B

123. **Comment:** Slide 28. The side notes that there was a 10% reduction in overall GHGs in Fairfax County for the period 2005-2018. We should note that the goal of the Cool Counties Pledge was to reduce GHGs county wide by 20% from the 2005 baseline by 2020. Has ICF explored why the county was able to make the 10% reduction? What activities or practices did it undertake that caused the GHG numbers to drop?

    Response: Fairfax County was able to see a 10% reduction in GHG emissions between 2005 and 2018 primarily through the electric grid switching to a cleaner energy mix. A more in-depth contribution analysis of the emission reductions achieved to date has not been requested. COG can share the contribution analysis done for the region.

124. **Comment:** Slide 64. While the slide correctly states that an 80% reduction in GHGs by 2050 is in line with the Paris Accord, the most recent IPCC findings indicate that scientists now believe that we only have until sometime between 2030-2052 to get to zero carbon emissions. The IPCC report states: Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. (high confidence)

    Response: All of the statements above are correct. The Paris Agreement's long-term temperature goal is to keep the increase in global average temperature to well below 2°C. To pursuing efforts to limit the increase to 1.5°C, carbon emissions goals should exceed and 80% reduction by 2050 from a 2005 baseline. It is recommended the commenter refer this comment to the Task Force for consideration.

125. **Comment:** How will we take cost into account, as well as willingness to pay and ability to pay (especially with regard to low income households)?

    Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. At a high level, ability to pay can be understood from economic criteria outputs, such as the costs of actions and strategies for actors (e.g., the County). Willingness to pay can be understood through Task Force representatives and through community engagement.

126. **Comment:** With respect to targets, Covanta supports the goal of achieving GHG reductions using science-based methods to reduce warming rates to < 2 C by 2050. The goal of 80% reduction by 2050 is the target goal consistent with this target. Favor the concept of attainable step wise and interim targets, then resetting until aspirational goal is achieved.

Response: Goals, both long-term goal(s) and interim year goal(s), will be decided upon by the Task Force through a vote. As noted in the GHG Protocol Mitigation Goal Standard, multi-year goals have a better chance of limiting cumulative emissions over the goal period than single-year goals, and they facilitate understanding of anticipated emissions levels over multiple years, rather than only a single year. It is recommended that the commenter refer this comment to the Task Force for consideration.

127. **Comment:** Are the GHG estimates accurate and consistent between Fairfax's GHG emissions inventory and two MWCOG estimates? Will you please address these discrepancies, including emissions related to the Covanta incinerator?

Response: Addressed in 1A responses - GHG estimates are accurate. The differences in estimates between Fairfax's inventory vs. COG's is largely due to the omission of a number of emissions categories in Fairfax County's 2013 GHG emissions inventory, as well as possible differences resulting from calculation tools (Fairfax County used the Climate Registry's General Reporting Protocol, while COG used ICLEI's ClearPath tool). The difference in the two COG emissions estimates is due to the face that the CECAP excludes aviation emissions, while previous COG work has included this sector. COVANTA reports all emissions to the EPA, which includes waste generated outside of the County's boundaries.

128. **Comment:** Are the draft emission scenarios (v.2) unnecessarily limiting potential sources of emissions from the models? Specifically heating and cooling and all vehicles other than light duty.

Response: To achieve aggressive reduction goals, the plan will need to involve efforts to reduce emissions from the source sectors noted.

129. **Comment:** Can the planning models include legislative, regulatory and budgetary changes in Richmond that appear essential to achieving significant GHG reductions?

Response: In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals. The review of selected actions and strategies will include the regulatory or legislative authority as well as cost-benefit analyses. ICF will be reviewing changes at the state-level to the extent they effect Fairfax County and to the extent they are fully defined and are in place or likely to be in place.

130. **Comment:** It would be helpful to better understand what powers the County has to reach its goals. What policy and legal tools does the County have at its disposal to influence carbon emissions (e.g., taxation, incentives, regulations, fines)? A presentation on this topic would be informative. Knowing this will help us determine how realistic certain goals may be and inform the Task Force and Focus Group recommendations.

Response: In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet its goals. The review of selected actions and strategies will include the regulatory or legislative authority which will outline what actions fall within Fairfax's jurisdiction and which actions fall elsewhere, as well as to where citizens may make the most difference with their actions.

131. **Comment:** Geothermal has the potential to decrease both air conditioning and heating costs, usage, and therefore emissions. It's not really an energy source (e.g. like solar), but rather an efficiency add-on to a current building. What are the emissions (and therefore GHG) savings opportunities associated with a broader rollout of geothermal?

    Response: Geoexchange systems (or geothermal heat pumps) are a viable action for new buildings or as a retrofit to existing buildings. Geoexhange and similar systems may be considered as an action/strategy in Task 3 (modeling of mitigation actions/strategies) for either City operations or for installation in residences and commercial buildings. The list of mitigation actions/strategies will be developed based on community feedback and approved by the Task Force.

132. **Comment:** What are the biggest state-level barriers to achieving aggressive goals? Fairfax County itself may not be able to achieve certain reductions without broader state support.

    Response: It is true that the actions of Fairfax County alone may not be sufficient to achieve aggressive greenhouse gas reduction goals. In modeling mitigation actions and strategies in Task 3 (modeling of mitigation actions/strategies), ICF will consider what current policies need to be considered at the state-level. As part of the modeling, ICF will not make assumptions about what needs to happen at the state-level beyond what is already in-place or being considered. ICF may conduct a sketch analysis though indicating what it might take to achieve goals at a more general-level.

133. **Comment:** What mechanisms can be put into place to develop goals in the latter years of long-term plans? For example, the presentation mentioned most plans set goals for 2025, 2030, and 2050 which leaves a 20 year gap without goal setting targets. That makes sense since so much can change in latter years, yet having interim goals should help keep us on target during the critical latter part.

    Response: CECAP A few specific mechanisms that have been used to ensure that latter year goals remain on target.
    - Cities and counties have required annual or biannual updates on progress.
    - Cities and counties have required that climate action plan updates occur at a specific frequency so that new shorter-term goals can be established built and to ensure that long term goals can be reviewed.

134. **Comment:** When a goal is stated as 100% renewable grid and 100% net zero grid (p. 46), does nuclear qualify for either of those buckets?

Response: More accurate terminology for goals would be a carbon free grid and a 100% renewable grid. Nuclear energy would qualify as part of a carbon free grid, but not a 100% renewable grid. Net zero is usually used to refer to emissions or energy on a portfolio or building as opposed to electricity. For the purposes of this slide, this slide is meant to represent a 100% renewable grid.

135. **Comment:** Need to understand the financial impact and/or the impact on life as we know it for the various options so that we are not choosing strictly on motherhood

Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. Feedback on the costs and benefits of actions and strategies will be vetted by Task Force representatives.

136. **Comment:** In Adam's goal setting processes, how do we specifically achieve 20% GHG reduction for the transportation goal and 50% reduction for the electric grid goal?

Response: Sector specific goals like a 20% reduction in GHG emissions from transportation or a 50% reduction in electricity grid emissions could be achieved by a mix of actions and strategies. In Task 3 (modeling of mitigation actions/strategies), ICF will identify and analyze climate mitigation actions and strategies that would be required for the community to meet the goals established by the Task Force.

137. **Comment:** It was unclear to me from the material presented how we will use implementation costs (upfront costs and second-order effects) in evaluating attainability of some of these goals. For example, zero carbon is a no-brainer if it costs the same as BAU. This is obviously not true and I know everyone knows this, but it was unclear to me how/when we build in these realities into decision analysis.

Response: As part of Task 3 (modeling of mitigation actions/strategies), ICF will analyze select environmental, economic, and social impacts agreed upon with the Task Force and within available modeling and analysis resources for priority actions and strategies. Feedback on the costs and benefits of actions and strategies will be vetted by Task Force representatives. If there are specific criteria that support decision making, consider providing those to Task Force representatives. It is also worth noting that cost is an output of the modeling effort, as costs will depend on how an action or strategy is implemented; detailed cost information for strategies will not be available as part of the strategy selection process.

138. **Comment:** Attainable vs. Aspirational goals: Aren't we really setting both? As in: 2050 is always going to be aspirational, and interim years are more attainable

Response: Ultimately, the goals that are set will be determined by the Task Force. It is common practice to have both aspirational and attainable goals for a plan such as the CECAP.

139. **Comment:** How important is it to factor in cooperation with surrounding jurisdictions, since we are part of the same geographic area and thus share the same challenges (e.g., air pollution knows no "county line", so maybe it would have greater impact to work in concert with other jurisdictions on some goals).

Response: It is not within Fairfax County's efforts as part of this planning process to define a broader regional goal or efforts; COG has already set broader regional goals for the region.

140. **Comment:** Concerned with goal setting from the unique perspective of being a Dillon Rule state and having to contend with the inability to make big picture changes to development and transportation at a local level to accomplish visions C, D, and E; I am also concerned about what increased use of natural gasses entails and if a risk assessment has been established in the possible trade-off of adverse reactions to increased use of and obtainment of natural gas/nuclear energy.

Response: The commenter's concern is noted. 30 other states are also Dillon Rule states, and that has not prevented jurisdictions within those states from setting aggressive goals related in their climate action planning. There are always limitations on what can be done within any jurisdiction, and it will be important to note these limitations and use them as part of the process for selecting strategies and actions. For this planning effort Fairfax County and the Task Force may elect to focus first on what the County has control or influence over, while then clearly identifying other strategies and actions for which the County will need to work with partners to implement.

Strategies and actions have not been selected by the Task Force at this point, therefore ICF cannot comment at this point on the statement regarding natural gas and nuclear energy.

141. **Comment:** Slide pg 60 - The County's GHG reduction goal must be based on absolute GHG reductions and not on a GHG emissions intensity goal. The atmosphere/climate responds only to the total GHGs emitted. It does not care if GHG intensity is lowered if absolute GHG increased or did not go down as much as needed to stay below the 1.5 degrees C temperature rise target.

Response: The presentation provided an overview of different goal type options based on guidance on greenhouse gas goal setting from The GHG Protocol Mitigation Goal Standard. There are advantages and disadvantages to each goal type. It is

correct that an absolute GHG reduction goal is likely to be more effective at driving reductions than an intensity GHG reduction goal. Goals, including long-term year and interim year goals, will be decided upon by the Task Force through a vote.

142. **Comment:** Slide pg. 62 " Given that the County is already committed to a Base Year Emissions goal of 80% below 2005, it seems most reasonable and logical for this plan to be built to deliver to that, rather than start to rethink and backslide from the goal that the County has already committed itself to. The same outcome can be achieved by setting a Fixed-level goal of the absolute amount of emissions that 80% reduction from 2005 represents. Base year intensity goals are not useful in working to aggressively mitigate climate change since only absolute emissions impact temperature rise, and it is even possible for absolute emissions to go up over time while meeting intensity goals. The concept of a baseline scenario goal seems to bring double uncertainty into the process of making real GHG emissions reduction progress; you not only need to do your best to determine how you will reduce your GHGs, but also first try to predict what those emissions will be sometime in the future to set as a starting point to reduce from. It seems unclear why this is even listed as a choice.

Response: COG has set broader regional goals for the region as a whole, including a goal of reducing emissions by 80% by 2050. Fairfax County supports the regional COG goal of 80% by 2050, however specific goals will be set in the CECAP process. The presentation provided an overview of different goal type options based on guidance on greenhouse gas goal setting from The GHG Protocol Mitigation Goal Standard. There are advantages and disadvantages to each goal type. It is correct that an absolute GHG reduction goal is likely to be more effective at driving reductions than an intensity GHG reduction goal. Goals, including long-term year and interim year goals, will be decided upon by the Task Force through a vote.

143. **Comment:** Discussion of goal elements was good background information, but Task Force should focus on achieving an absolute GHG reduction (pick a non-abnormal base year to measure future reductions against). Any goal based on intensity or per capita does not ensure that any specific GHG reduction target would be achieved - it can allow emissions to grow beyond a temperature increase cap. For example, World Wildlife Fund's Climate Savers program was begun in early 2000 with a select group of Fortune 500 companies (e.g. Johnson & Johnson, HP, Nike and others) which committed to annual public announcements as to their progress of achieving an absolute reduction in GHG emissions below a base year's emissions despite corporate expansion. This program was recognized as a world class program by global climate leaders because these companies committed to be "best in class"; a strong Leadership position - Fairfax County should be
"best in class" of all counties.

Response: The presentation provided an overview of different goal type options based on guidance on greenhouse gas goal setting from The GHG Protocol Mitigation

Goal Standard. There are advantages and disadvantages to each goal type. It is correct that an absolute GHG reduction goal is likely to be more effective at driving reductions than an intensity GHG reduction goal. Goals, including long-term and interim year goals, will be decided upon by the Task Force through a vote.

144. **Comment:** Because of the changing scientific data from the IPCC, I believe that we cannot spend one second's worth of energy on a scenario that will not get us to the Paris Agreement goals by 2045 (instead of 2050). I would prefer the target date be 2030 given the acceleration of global warming, but 2045 at least agrees with the net zero carbon emissions goal for the Commonwealth of Virginia (see Clean Economy Act 2020). Scenario A and B should be deleted - they are almost like Business as Usual. Why spend time on that? Scenario C, D and E might be useful if they were rewritten with greater clarity of definitions and also included all sectors with all elements rather than pre-selected ones. Therefore, E is the only one that gets us close to a goal of 80% emissions, so I would also delete Scenario C and D as written.

Response: The scenarios were intended to show potential levels effort to achieve different levels of emission reductions. Goals, including long-term and interim year goals, will be decided upon by the Task Force through a vote. It is recommended the commenter refer this comment to the Task Force for consideration.

145. **Comment:** How are dates determined? (goal setting)

Response: Goals, and the goals' associated timelines (i.e., dates), will be decided upon by the Task Force through a vote.

146. **Comment:** Base year goals seem most doable. They must take into account not only the applicable sectors but also the County economic movement including population increase overall and type of population increase, as well as, land use and related development and transportation needs. In view of the increasing pace of commercial and residential activity in the County, 5 year interim goals and strategic plans are more realistic than 10 year interim goals and plans.

Response: Goals, including long-term and interim year goals, will be decided upon by the Task Force through a vote. It is recommended the commenter refer this comment to the Task Force for consideration.

147. **Comment:** We need to have a goal that corresponds to an emission trajectory that is in line with reductions necessary to avoid dangerous climate change impacts (Slide 64). The goal needs to be in line with Paris Agreement; otherwise, we are not going to achieve important results.

Response: The Task Force can consider recommending and agreeing on such a goal as part of the CECAP process. Goals, both long-term goal(s) and interim year goal(s), will be decided upon by the Task Force through a vote.

148. **Comment:** Also, I didn't understand why we're even talking about Scenarios A, B, C, and maybe even D. The Paris Accords have more ambitious goals, and the 2019 Virginia General Assembly articulated more ambitious goals. So it would make sense to me to describe business as usual for reference, but focus attention on Scenario E, perhaps D, and definitely one even more ambitious than E.

Response: The scenarios were intended to show potential levels effort to achieve different levels of emission reductions. Goals, including long-term and interim year goals, will be decided upon by the Task Force through a vote.

149. **Comment:** Goals should be primarily tagged to measurable results as opposed to methods. And, they should be short, medium and long term. Otherwise, the can gets kicked down the road for the next guy to worry about.

Response: Goals, both long-term goal(s) and interim year goal(s), will be decided upon by the Task Force through a vote. The Task Force may consider setting or linking goals with metrics other than greenhouse gas emissions (e.g., energy use intensity). We will continue to measure results in terms of GHG emissions, through the ongoing GHG inventory work.

150. **Comment:** The discussion of the different goal types was interesting. However, the impact of the alternatives, although crucial to the design of the goal, was not highlighted. Of the four approaches provided, only the base year emission goal can result in actually reducing emissions. With rising populations or increasing economic activity, any goal that is based on a per capita or any other form of intensity will result in actual emission increases. Will the county accept a goal that allows GHG emissions to increase?

Response: The presentation provided an overview of different goal type options based on guidance on greenhouse gas goal setting from The GHG Protocol Mitigation Goal Standard. There are advantages and disadvantages to each goal type. It is correct that an absolute GHG reduction goal is likely to be more effective at driving reductions than an intensity GHG reduction goal. Goals, including long-term year and interim year goals, will be decided upon by the Task Force through a vote. CECAP is envisioned as a plan to reduce GHG emissions, and therefore it is not planned to allow such a goal.

151. **Comment:** What type of goal are we using?

Response: The presentation provided an overview of different goal type options based on guidance on greenhouse gas goal setting from The GHG Protocol Mitigation Goal Standard. Goals, including long-term and interim year goals, will be decided upon by the Task Force through a vote.

152. **Comment:** The Plan should absolutely address Scopes 1, 2 & 3. Addressing only County activities, as seems to have been the exclusive focus to date remains a good way to set an example and show we are all in this together, but leaves unaddressed the 95% of GHG emissions that occur in the county that are not scope 1 or 2 wrt county ownership.

Response: The CECAP will include community activities since it is a community plan. The intent was never to focus only on County government operations.

153. **Comment:** Slide 65. It is not clear to me what the language in the blue flag area means. It states: "More than 75% of the GHG reduction goals with target years of 2030 or earlier were considered attainable." Which goals are we talking about?

Response: The GHG reduction goals refer to goals from the climate plans that ICF reviewed in preparation for a memorandum on climate mitigation goal setting. See Comment 1A-118 for a list of climate plans reviewed.

154. **Comment:** How successful have similar jurisdictions been in achieving set goals?

Response: Data only exists to show potential success towards goal achievement in the near-term (e.g., 2020 or 2025 goals). For example, the 2015 GHG inventory from the Metropolitan Washington Council of Governments shows that metropolitan Washington was halfway to its goal of reducing GHG emissions by 20 percent below 2005 levels by 2020. It is likely too early to make conclusions about potential achievement of longer term goals.

155. **Comment:** How were the techniques chosen per scenario and why?

Response: Scenarios give a high-level view at a range of paths the County could take. The scenarios illustrate that a) actions in limited sectors only generate marginal reductions and b) achieving aggressive reduction targets will require a comprehensive multi-sector approach.

156. **Comment:** I didn't understand why the baseline reference was often 2005. Why not start from where we are now, say 2018, the latest year for which we have data. By starting with 2005, we could go five or ten years and just be back to 2005 levels, implying we're making progress, when we wouldn't be making any improvement over the 2005 GhG levels at all.

Response: 2005 is a base line year that is often used in climate planning processes specifically for establishing emission reduction goals. Localities across metropolitan Washington selected this base year when first crafting climate change goals in 2008. For the Fairfax County effort, the plan is to work off of the most recent inventory year, in this case, 2018.

157. **Comment:** In Scenarios D & E both talk about the increase in the use of natural gas (ranging from 15%-50%). What is the current market share of natural gas? Are there ways to set targets that don't require an increase in natural gas usage (which comes with its own concerns with expanding fracking, risks to water quality), such as nuclear (which I understand comes with its own challenges)?

Response: The share of total energy emissions from natural gas directly consumed in Fairfax County in 2018 is was 28 percent. Current share of natural gas in generation fuel mix for the PJM grid is about 38 percent (as of April 18, 2020). The current share of nuclear is also 38 percent (again, as of April 18, 2020). Scenarios D & E both assume that 50% of the natural gas consumed in the residential and commercial sector would come from zero carbon/renewable natural gas. They do not suggest that total natural gas usage would increase. The Task Force could consider scenarios that change the energy mix in other ways.